

C L A I M S

1. A sheet material information-detecting apparatus comprising:

5 a sheet feeding means for feeding a sheet material;

a correcting means for correcting the position of the fed sheet material to bring the orientation direction of the constituting material of the sheet material to be in a prescribed direction relative to
10 the feed direction of the sheet material;

an external force applying means for applying an external force to the sheet material in the corrected position;

15 a signal-detecting means for detecting signal from the sheet material; and

an information-acquiring means for acquiring information on the stress caused by the applied external force in the sheet material.

20 2. The sheet material information-detecting apparatus according to claim 1, wherein the apparatus comprises a sheet material sensor for sensing interaction of the external force applying means and signal detecting means with the sheet material.

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3. The sheet material information-detecting apparatus according to claim 2, wherein the sheet

material sensor detects the state or position of the sheet material.

4. The sheet material information-detecting
5 apparatus according to claim 1, wherein the sheet
information acquiring means acquires information by
comparison of the result of the detection by the
signal detecting means with data.
- 10 5. The sheet material information-detecting
apparatus according to claim 1, wherein the sheet
information acquiring means acquires information on
the sheet material by comparison of the result of
detection by the signal detecting means with data for
15 directions of the sheet material.
6. The sheet material information-detecting
apparatus according to claim 1, wherein the external
force is a mechanical force.
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7. The sheet material information-detecting
apparatus according to claim 6, wherein the
mechanical force is plural times of impacts at
different collision velocities.
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8. The sheet material information-detecting
apparatus according to claim 7, wherein the external

force is vibrations having different frequency components.

9. The sheet material information-detecting
5 apparatus according to claim 1, wherein a restricting member is provided for restricting the region of displacement of the sheet material on application of the external force.

10 10. The sheet material information-detecting apparatus according to claim 1, wherein the external force is a wave.

11. The sheet material information-detecting
15 apparatus according to claim 1, wherein the external force is an optical wave.

12. The sheet material information-detecting
20 apparatus according to claim 1, wherein the signal-detecting means is comprised of a material having a piezoelectric property.

13. A sheet-material treating apparatus, comprising the sheet material information-detecting apparatus
25 set forth in claim 1, and a sheet material-treating assembly for treating the sheet material by utilizing the information obtained by the sheet information-

detecting apparatus.

14. A sheet material feeding unit comprising the sheet material information-detecting apparatus set
5 forth in claim 1, and a driving assembly for the sheet material feeding means.

15. A process for acquiring information on a sheet material, comprising the steps of:

10 correcting the position of a fed sheet material to bring the orientation direction of the constituting material of the sheet material to be in a prescribed direction relative to the feed direction of the sheet material;

15 applying an external force to the sheet material in the corrected position; and

 acquiring information on the stress caused by the applied external force in the sheet material.